

Triumph Sales Co. Inc.
1957 W 144th Street
P.O. Box 1127 Alondra
Cardena, California 90249



Station

1965

R.W. Kustner

TABLE OF CONTENTS

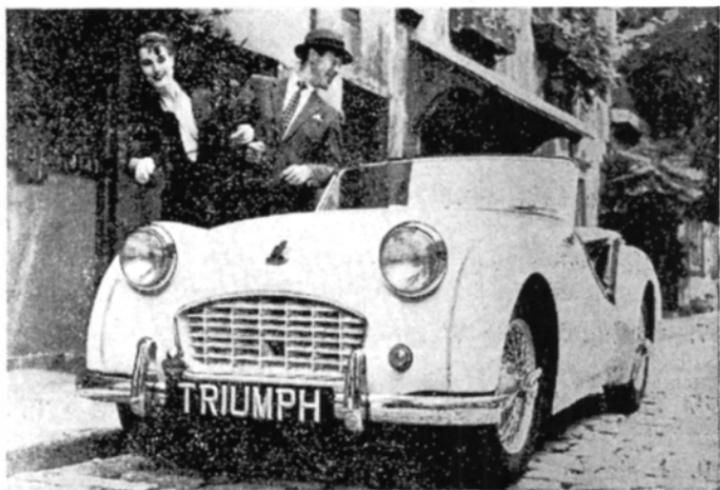
	PAGE
1. About the TSOA	3
2. TSOA Constitution and By-Laws	4
3. Specifications and Performance Charts for TR-2 and TR-3	6
4. Hints and Tips for New Owners	14
5. Service Information	18
6. Winterizing your Triumph	24
7. Getting Set for Warm Weather	28
8. TR-2 and TR-3 Specification and Engineering Changes	30
9. Basic Competition Preparation	33
10. TSOA Rallies of Europe	41
11. Competition Results Form (Suggested)	42
12. Address Change Form	43
13. Service Log	44

TRIUMPH SPORTS OWNERS ASSOCIATION
P. O. Box 170, RADIO CITY STATION
NEW YORK 19, NEW YORK

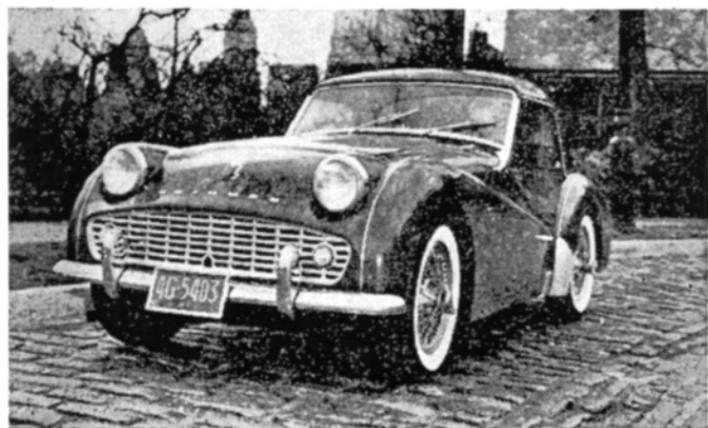
TRIUMPH — 1954 TO 1960



TR-2 — 1954-55



TR-3 — 1956-1957



TR-3A — 1958 to date

THE TRIUMPH SPORTS OWNERS ASSOCIATION

When the Triumph TR-2 appeared on the sports car scene in 1954, public response to the car's performance and other qualities was so good that the Standard-Triumph Motor Company realized immediately that here was the true "enthusiast's" car. The Triumph could be raced, driven in rallies or run to the store for groceries . . . it offered driving pleasure to many more people because of its combination of sports car performance and everyday practicality. The continued popularity of the TR-3 and TR-3A models has proved this fully.

To satisfy the varied needs of all types of Triumph owners, the Triumph Sports Owners Association was formed to act as an information center. Through the TSOA NEWSLETTER, members are kept informed of the latest developments and modifications on the Triumph, service and care of the car, activities of Triumph owners in the United States and national and international competition. A similar organization operates in England.

Other TSOA services include the annual Triumph Rallies of Europe which are offered to members as an economical and enjoyable way to see Europe via car. To aid owners in getting together to enjoy the advantages of a local club as well as the National Association, the TSOA encourages the formation of local chapters. These local groups take care of the social and competitive functions which are so important to a sports car club.

Triumph sports car owners are among the most loyal in the world. Through the NEWSLETTER, the Rallies and a policy of immediate service and help to members, the TSOA endeavors to keep its members enthusiastic Triumph boosters.

MEMBERSHIP

Membership in the Association is limited to Triumph sports car owners in the United States, their families and persons interested in Triumph sports cars and the purposes of the Association. To become a member, the owner or interested person must fill in the Association Registration Form and mail it, together with a registration fee of \$5.00 (covering cost and postage of Handbook, Car Badge, future additions to the Handbook, subscription to the NEWSLETTER and a 1-year subscription to the STANDARD-TRIUMPH REVIEW) to:

TRIUMPH SPORTS OWNERS ASSOCIATION

P. O. Box 170, Radio City Station

New York 19, New York

As soon as the Registration Form is received, the new member will be sent his Car Badge and Handbook. His subscription to the NEWSLETTER will begin with the issue following his registration.

TRIUMPH SPORTS OWNERS ASSOCIATION—BY-LAWS

1. The name of this Association shall be Triumph Sports Owners Association.

2. The purposes of this Association shall be to encourage the ownership and operation of Sports Cars, to promote the safe, courteous, efficient and skillful operation of Sports Cars on the highways, to act as a source of information for members, to further the interests of owners and drivers of Sports Cars and to promote the sport and pastime of motoring in all its phases and to do all such acts and things, to make all such arrangements for any and all purposes as may be determined necessary, and to own real and personal property in connection therewith.

3. The Association emblem shall be the design of a shield, striped and sectioned in blue and white, inscribed with the initials T.S.O.A. or the Association name.

4. All owners of Triumph Sports Cars, employees of Standard-Triumph Motor Company, Inc., its appointed distributors and their Triumph dealers, and persons interested in Sports Cars and the purposes of the Association shall be eligible for membership except that at no time shall the number of members not owning Triumph Sports Cars exceed 25% of the total membership. One membership in the Association shall include all members of the immediate family.

5. Dues shall be \$5.00, payable on application and members shall receive the Association Badge, Handbook, a subscription to any publications of the Association and a one-year subscription to the STANDARD-TRIUMPH REVIEW. No refunds of membership dues shall be granted.

6. Members may be suspended or expelled from membership by the officers for infraction of Association rules or conduct tending to reflect on the reputation and integrity of the Association.

7. Meetings of the Association may be called from time to time by the officers.

8. At all meetings, a majority of the officers shall constitute a quorum.

9. The officers of the Association shall consist of a President, Secretary-Treasurer and such Assistant Treasurers or Assistant Secretaries as may be from time to time desirable and the officers shall have all the duties normally appertaining to said offices.

10. The present officers of the Association are President and Secretary-Treasurer. Any vacancy in such office shall be filled by vote of the officers.

11. The officers may, from time to time, offer assistance to and recognize local chapter groups of members of this Association. However, under no circumstances shall this Association be responsible for any debts, damages or liabilities of any kind or nature incurred or sustained by any chapter.

12. All persons or corporations extending credit to, contracting with, or having any claim against the Association or the officers shall look only to the funds and property of the Association for payment of any such contract or claims or for the payment of any debt, damage, judgment, or decree, or any other money that may otherwise become due or payable to them from the Association or the officers, so that neither the members of the Association nor the officers, present or future, shall be personally liable therefor.

13. Any person made a party to any action, suit or proceeding by reason of the fact that he, his testator or intestate, is or was an officer or employee of the Association shall be indemnified by the Association against all expense actually and necessarily incurred by him in connection with the defense of such action, suit or proceeding, including attorney's fees, except in relation to matters as to which he shall be adjudged in such action, suit or proceeding to be liable for negligence or misconduct in the performance of his duties as such officer or employee. Such right of indemnification shall not be deemed exclusive of any other rights to which such officer or employee may be entitled apart from this By-Law.

14. The By-Laws of this Association may be amended by vote of the officers.

ADDITIONS TO THE HANDBOOK

This book is printed and bound to allow addition of new information sheets. As new service, technical and other data becomes available, sheets will be issued which can easily be added to the book.

USEFUL DATA APPLYING TO THE TR2. AS DELIVERED FROM THE FACTORY

Car Number (Commission Number)—plate on dash. Engine number—on cylinder block. Both numbers under hood. Number of cylinders—Four. Bore 83 mm. (3.268 ins.). Stroke 92 mm. (3.622 ins.). Capacity 1,991 c.c. (121.5 cu. ins.). Compression ratio 8.5. Firing order 1, 3, 4, 2. Brake Horse Power—road setting 90 b.h.p. at 4,800 r.p.m.

Dimensions

Wheelbase	7' 4"	Height—	
Track (front)	3' 9"	Top up	4' 2"
Track (rear)	3' 9½"	Top of screen	3' 10"
Ground clearance (under axle)	6"	Top down, screen removed	3' 4"
Turning circle (between curbs)	32' 0"	Weight, curb conditions (exclud- ing extra equipment), but com- plete with gasoline, oil, water and tools—	2107 lbs.
Tire size	5.50"—15"	Axle weights—	
Tire pressures—(see Inst. Book).		Front—	989 lbs.
Front	22 lbs./sq. in.	Rear—	896 lbs.
Rear	24 lbs./sq. in.	Shipping weight (dry)—	1771 lbs.
Length	12' 7"		
Width	4' 7½"		

Capacities

Fuel tank 15 gallons (57 litres). Engine sump 13.2 pints (6.5 litres). Gearbox 1.8 pints (0.8 litres), if fitted with overdrive 4.2 pints (2 litres). Rear axle 1.8 pints (0.8 litres). Cooling system 16.8 pints (7.5 litres). With Heater 17.4.

Timing Data

Valve timing (rocker clearance set at 0.015"): Inlet opens 15° B.T.D.C., closes 55° A.B.D.C. Exhaust opens 55° B.B.D.C., closes 15° A.T.D.C. ignition timing (normal) 6° B.T.D.C.

Timing Marks

Top Dead Centre Mark, hole drilled in fan pulley and pointer on timing cover. 15° before or after top dead centre=0.081" piston travel or 1.5" measured round the flywheel adjacent to the starter teeth).

Tappet Clearances (running). Engine cold.

Inlet valve 0.010". Exhaust 0.012". For prolonged high speeds, both exhaust and inlet should be 0.013". Contact breaker points gap 0.015".

Carburetors—Twin S.U. Type H.4.

Jet Needles—normal running FV. For maximum performance use GC.

Plugs. Normal, Lodge type CNY. For maximum performance, colder running, use Lodge type 2HN.

Steering. High gear, cam and lever type.

Front Wheel Geometry. Camber static laden 2°. Castor 0°. King pin inclination 7°. Track Setting:—Toe-in $\frac{1}{8}$ ".

Car Suspension. Static deflection of wheels, Front $5\frac{1}{8}$ ", competition $4\frac{1}{8}$ ".

Rear 4" normal and competition.

Shock absorbers: Front, Girling telescopic. Rear, Armstrong lever arm type, Normal and Competition setting.

Performance

The following performance may be expected from an engine in correct tune and fully run in:—

Maximum B.H.P., 90 at 4,800 r.p.m. (complete with fan, generator, etc.).

Maximum torque, 1,410 lb./ins. at 3,000 r.p.m. Equivalent to 145 lb./ft.

B.M.E.P. Piston speed, 2,850 ft./min. at 4,800 r.p.m. This is equivalent to 100 m.p.h. in top gear allowing for centrifugal force on the tires.

Transmission ratios:

	O/Drive	Top	3rd	2nd	1st	Rev.
Gearbox	0.82	1.00	1.325	2.00	3.38	4.28
Overall	3.03	3.7	4.9	7.4	12.5	15.8

Road Speeds

Engine speed at	O/Drive	Top	3rd	2nd	1st	Rev.
10 m.p.h.	410	500	660	1000	1680	2130
10 km./hr.	254	310	410	620	1050	1325

Speeds at 1,000 r.p.m.: Top Gear 20 m.p.h.
Overdrive 24.4 m.p.h.

Car Performance

Maximum speeds: (touring trim)	Gear	M.P.H.	Km.P.H.
	Top	110	175
	3rd	75	120
	2nd	45	75
	1st	25	40

Acceleration (two up) top gear.	20—40 m.p.h. (32—64 km.p.h.)	9 secs.
	30—50 m.p.h. (48—80 km.p.h.)	9 secs.
Through gears	0—50 m.p.h. (0—80 km.p.h.)	8 secs.
	0—60 m.p.h. (0—96 km.p.h.)	12 secs.
Standing	$\frac{1}{4}$ mile	18 secs.

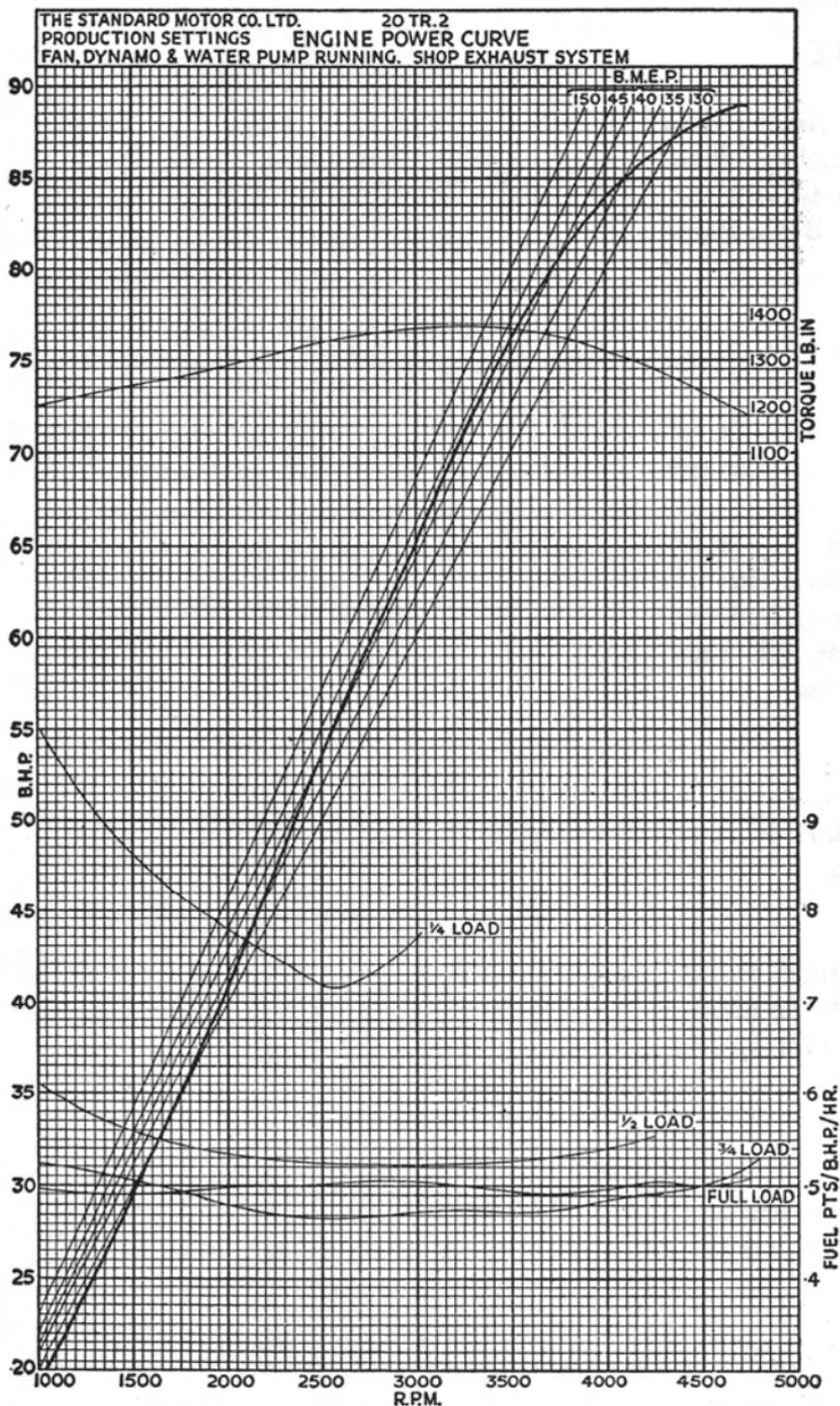
Consumption

Gasoline: High speed touring 32 m.p.g. (8.8 litre/100 km.).
oil: 3,000 m.p.g. (1,100 km. per litre).

Braking

30 m.p.h. (48 km.p.h.), stopping distance 30 feet (9 metres).

20 TR2. POWER CURVE



Engine: Type 20 TR2. Compression ratio 8.5. Carburetors: Twin S.U. F.V. Needles with air cleaners. Ignition: Automatic advance.
 Remarks: Fan, Generator and Water Pump running, shop exhaust system.

USEFUL DATA APPLYING TO THE TR3.

AS DELIVERED FROM THE FACTORY

Car Number (Commission Number)—plate on dash. Engine Number—on Cylinder block. Both numbers under hood. Number of cylinders—Four. Bore 83 mm. (3.268 ins.). Stroke 92 mm. (3.622 ins.). Capacity 1,991 c.c. (121.5 cu. ins.). Compression ratio 8.5. Firing order 1, 3, 4, 2. Brake Horse Power—road setting 100 b.h.p. at 5,000 r.p.m.

Dimensions

Wheelbase	7' 4"	Height—	
Track (front)	3' 9"	Top up	4' 2"
Track (rear)	3' 9½"	Top of screen	3' 10"
Ground clearance		Top down,	
(under axle)	6"	screen removed	3' 4"
Turning circle		Weight, curb conditions (exclud-	
(between curbs)	34' 0"	ing extra equipment), but com-	
Tire size	5.50"—15"	plete with gasoline, oil, water	
Tire pressures—(see Inst. Book).		and tools—2135 lbs.	
Front	22 lbs./sq. in.	Axle weights—	
Rear	24 lbs./sq. in.	Front—1000 lbs.	
Length	12' 7"	Rear—907 lbs.	
Width	4' 7½"	Shipping weight (dry)—	
		2009 lbs.	

Capacities

Fuel tank 14.4 gallons (54.7 litres). Engine sump 13.2 pints (6.25 litres). Gearbox 1.8 pints (0.8 litres), if fitted with overdrive 4.2 pints (2 litres). Rear axle 1.8 pints (0.8 litres). Cooling system 16.8 pints (7.5 litres). With Heater 17.4.

Timing Data

Valve timing (rocker clearance set at 0.015"): Inlet opens 15° B.T.D.C., closes 55° A.B.D.C. Exhaust opens 55° B.B.D.C., closes 15° A.T.D.C. Ignition timing (static) 4° B.T.D.C.

Timing Marks

Top Dead Centre Mark, hole drilled in fan pulley and pointer on timing cover. 15° before or after top dead centre=0.081" piston travel or 1.5" measured round the flywheel adjacent to the starter teeth).

Tappet Clearances (running). Engine cold.

Inlet valve 0.010". Exhaust 0.012". For prolonged high speeds, both exhaust and inlet should be 0.013". Contact breaker points gap 0.015".

Carburetors—Twin S.U. Type H.6.

Jet Needles—For normal and competitive work use SM.

Plugs. Normal, Lodge type CNY. For maximum performance, colder running, use Lodge type 2HN.

Steering. High gear, cam and lever type.

Front Wheel Geometry. Camber static laden 2°. Castor 0°. King pin inclination 7°. Track Setting:—Toe-in $\frac{1}{8}$ ".

Car Suspension. Static deflection of wheels, Front $5\frac{1}{8}$ ", competition $4\frac{1}{8}$ ". Rear 4" normal and competition.

Shock absorbers: Front, Girling telescopic. Rear, Armstrong lever arm type, normal and competition setting on both front and rear.

Performance

The following performance may be expected from an engine in correct tune and fully run in:—

Maximum B.H.P., 100 at 5,000 r.p.m. (complete with fan, generator, etc.).
Maximum torque, 1,410 lb./in. at 3,000 r.p.m. Equivalent to 145 lb./ft.
B.M.E.P. Piston speed, 2,850 ft./min. at 4,800 r.p.m. This is equivalent to 100 m.p..h. in top gear allowing for centrifugal force on the tires.

Transmission ratios:

	O/Drive		O/D.		O/D.			
	Top	Top	3rd	3rd	2nd	2nd	1st	Rev.
Gearbox	0.82	1.00	1.085	1.325	1.64	2.00	3.38	4.28
Overall	3.03	3.7	4.02	4.9	6.07	7.4	12.5	15.8

Road Speeds

Engine	O/Drive		O/D.		O/D.			
Speed at	Top	Top	3rd	3rd	2nd	2nd	1st	Rev.
10 m.p.h.	410	500	540	660	820	1000	1680	2130
10 km./hr.	254	310	335	410	510	620	1050	1325

Speeds at 1,000 r.p.m.: Top Gear 20 m.p.h.
Overdrive 24.4 m.p.h.

Car Performance

Maximum speeds: (touring trim)	Gear	M.P.H.	Km.P.H.
	Top and		
	Top O/Drive	110	177
	3rd O/Drive	90	145
	3rd	75	120
	2nd O/Drive	55	90
	2nd	45	75
	1st	25	40

Acceleration (two up) top gear.	20—40 m.p.h.	9 secs.
	(32—64 km.p.h.)	
	30—50 m.p.h.	9 secs.
	(48—80 km.p.h.)	
Through gears	0—50 m.p.h.	8 secs.
	(0—80 km.p.h.)	
	0—60 m.p.h.	12 secs.
	(0—96 km.p.h.)	
Standing	$\frac{1}{4}$ mile	18 secs.

Consumption

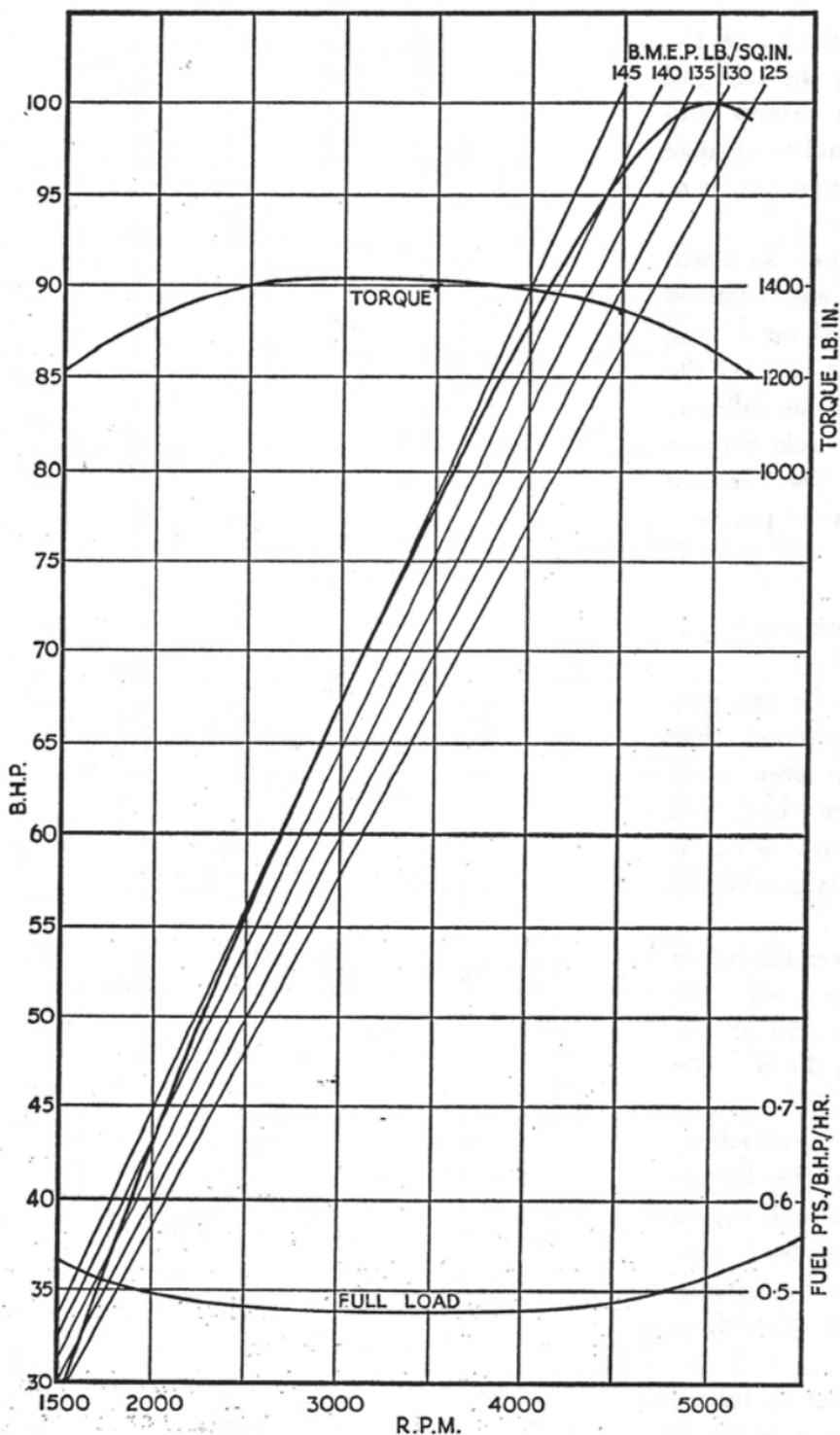
Gasoline: High speed touring 26—32 m.p.g. (10.87—8.83 litre/100 km.).

Oil: 3,000 m.p.g. (1,100 km. per litre).

Braking

30 m.p.h. (48 km.p.h.), stopping distance 30 feet (9 metres).

20 TR3 POWER CURVE



Engine: Type 20 TR3. Compression ratio 8.5 Carburetors: Twin S.U. H.6. Remarks: Fan, Water Pump, Generator Running, Shop Exhaust System, Premium Grade Fuel.

HINTS AND TIPS FOR NEW OWNERS

When you buy a new Triumph, the Owner's Manual supplied with the car will tell you everything you need to know about driving the car and taking basic care of it. However, new owners often question certain procedures and operations. A new car is different and often makes strange noises that take getting used to. The following list covers things not mentioned in the Owner's Manual and may help set your mind at rest.

1. The soft top on a TR-3 is planned to fit very tightly when new so it will not sag after a few months' use. As supplied, the top and side curtains are among the best-fitting items of their kind and will last for a long time. Therefore, do not be concerned if the top is difficult to erect the first few times. The correct method of raising the roof is as follows:
 - A. Erect the top bows, leaving the knee joints at either side bent as shown by the dotted lines in the illustration (A). The forward bow is shown by dotted lines at point C in the relaxed position. When erecting the bows, make sure it is moved so that point C is bent to the location of the arrow.
 - B. Button the top on completely. It does not matter where you begin. *Do not* lean on or pull on the windshield.
 - C. When all fasteners are secured, kneel or reach inside the car, grip the frame at B and pull knee joints to fully erect position, thus tightening the top. This step can be accomplished even more easily if one person stands at each side of the car and both pull forward at the same time. This is especially good if the car is new. Be careful of your fingers at this point . . . it is possible to catch and bruise them between frame members.
 - D. Open out and fit the rubber-backed roll of material over the lip on the inner edge of the upper windshield frame. Latest models, from approximately June, 1959 production, have an extra flap of material at the front of the top which must be buttoned down under the Tenax fasteners in order to have proper sealing. On cars so equipped and on older models as well, be careful when attaching these push-button fasteners. When attaching, place the female section over the male peg and make sure it is firmly seated before pushing the button. Never apply the fastener by pushing the button since this will damage the locking jaws. Remove the Tenax fastener only by pulling the button, never by pulling the base. One drop of oil inside the snap will improve action.
 - E. Put a drop of penetrating oil on each top frame joint to insure smooth action. Wipe off surplus oil immediately or it may damage the paint.

For side screen information, see the Service section.

4. Michelin X tires, if fitted, will sing at highway speeds. Do not be concerned about this since it is caused by their peculiar tread pattern and remarkable grip on the road.
5. If any wheel vibrations are evident when the car is new, first check your tire pressures which are more critical on a light sports car than a heavy sedan. If exact pressures do not correct wheel shimmy, which is generally evident through a tremor in the steering wheel, have your dealer take corrective action right away. Driving long distances with unbalanced or out-of-round wheels throws tires out of shape, a condition which is very difficult to correct later on.
6. If your car has overdrive, remember it is for use on all three upper gears. It can be very helpful when driving in traffic. In heavy rush-hour traffic, second gear and second overdrive may be used, rather than shifting back and forth between second and third gear. Don't worry if the overdrive engages or disengages with a slight jerk . . . it is intentionally designed to engage without the loss of a split second. Smooth engagement and disengagement can be effected by keeping your foot on the gas when switching.
7. Please be careful when storing the side curtains in the trunk. If they are thrown carelessly in, one on top of the other, they can damage each other through vibration and the tendency of the brackets of one to dig into the material of the other. Spend a little time figuring the best way to stow them, using a protective piece of blanket or towel in between.
8. Read the Owner's Manual carefully on how to engage and release the handbrake. The plastic grip is threaded on to the top of the lever. Don't try to screw this grip on too tight or you are likely to crack it around the threads.
9. To prevent unidentifiable rattles from the rear end, it is a good idea to take out all the tools from the spare wheel compartment and pack them in the tool roll provided. If the jack and ratchet handle seem to have disappeared, remove the spare wheel since they often slide down behind it. Put the ratchet in the tool roll and wrap the roll around the jack before strapping tightly to the side of the compartment. The starting handle may be shoved down beside the spare or placed across the back of the compartment. In order to prevent the copper hammer for wire wheels from sliding around noisily, wrap an old cloth around it and secure the cloth with rubber bands.

While you have the compartment open, make sure the spare is inflated in case of future emergencies.

10. If your dealer provides you with only one key, look for the other inside the rear license plate light. The factory thoughtfully tucks it in there.
11. Be careful when a service station attendant fills your battery. Overfilling the battery will cause acid to spill out, setting up corrosion in the battery well. This will eventually destroy the battery well drain tube. The level of the electrolyte in the battery should NEVER BE HIGHER THAN 1/16" OVER THE TOP OF THE PLATES. To make doubly sure, get a Lucas Battery Filler Bottle, an inexpensive item having a valve in the neck, which acts as an automatic cut-off when the electrolyte reaches the proper level. This is a good investment for any TR owner and can be procured through Lucas Electrical Services, Inc., 505 W. 42nd St., N. Y. C.
12. If you have just purchased your TR-3 and it is spring or summer, you may notice some unwanted heat in the cockpit. Shut off the heater valve on the cylinder head which will prevent hot water from circulating through the heater core and will remove the extra heat.

SERVICE INFORMATION

As a supplement to your Owner's Manual and Service Manual, here are some items of TR-2 and TR-3 servicing which must be emphasized and some special hints, methods, etc. Remember, when you are faced with a service problem that you do not quite understand, study the Manuals or see your dealer before attempting the operation.

1. **WIRE WHEELS:** Rudge-Whitworth center-lock wire wheels provide the most rapid method of changing road wheels. Proper treatment, as outlined in the following paragraphs, will result in 100% good service.
 - (a) When the car is new — after the first long run or after 50 miles of short runs, jack up each wheel and hammer the knock-on hub caps to insure that they are tight.
 - (b) When wheels are rotated (after 4000/5000 miles), cover both conical surfaces and the serrations in the hub, also the coned surface and threads in the hub caps with a light coating of grease. Hammer tight and repeat as when car is new.
 - (c) Once in 12 months remove wheels for examination and re-greasing.
 - (d) When changing wheels, wipe the serrations and cones on hub and hub cap to remove any foreign matter such as rust or dirt that would prevent the wheel from seating properly.
 - (e) If hub extensions are removed for any reason, insure that they are replaced on the correct side of the car! Right Hand threaded extensions on Left Hand side, Left Hand threaded extensions on Right Hand side. A mistake here can be very dangerous.
 - (f) Always hammer the hub caps tight with a lead or copper hammer. Lift car on a jack before hammering. The hub caps are designed for self-locking but should not be permitted to run untightened since this may cause damage to the splines.
2. **SPARK PLUGS:** Earlier TR-2 and TR-3 models were fitted with Champion L10S plugs with L11S recommended for racing. Now, standard factory equipment is the Lodge CNY premium plug. The Lodge 2HN is recommended for high speed work. Plugs should be gapped at .025".
3. **IGNITION TIMING:** The correct method for setting ignition timing in a TR-3 is statically, as called for in the factory Service Manual. A timing or strobe light must not be used, since it is impossible to line it up correctly. A badly timed car will have poor gas mileage and suffer from loss of power. Here is the correct factory method for timing your car.

- (a) Crank engine by hand until distributor rotor points to #1 spark plug and the timing hole in the rear flange of the fan pulley lines up with the pointer.
 - (b) Set distributor timing scale 1 mark to the left of the thick mark ("Nominal" setting mark). The scale is on the shaft between the vacuum advance mechanism and the distributor body. Setting is accomplished by rotating the knurled knob on the far side of the distributor towards "R" (Retard).
 - (c) Loosen distributor clamp bolt.
 - (d) You will need a 12 volt test lamp which can be any 12 volt bulb provided with two connecting wires. Rotate distributor slightly anti-clockwise and, with ignition switch on and the test lamp connected from the distributor terminal to a ground, rotate the distributor clockwise till the points just open. This will be indicated by the test bulb lighting up.
 - (e) Tighten clamp bolt.
 - (f) At this point, #1 piston is at Top Dead Center and the distributor points have just opened. Therefore, the timing is now at Top Dead Center.
 - (g) As the points must open 4 degrees before Top Dead Center, turn the knurled knob towards "A" (Advance), setting the timing scale 1 mark to the right of the present setting (see (b) above). **REMEMBER, EACH DIVISION ON THE SCALE REPRESENTS FOUR DEGREES!**
 - (h) The adjustment made in (g) has returned the setting to the "Nominal" setting from which individual advance and retard adjustment can be made to suit your engine, available fuel, etc.
4. **LUBRICATION:** Due to the special nature of some of the grease points on the TR-2 and TR-3, you should make sure to have your car greased at a dealer or at a garage where they are familiar with TR servicing.
- (a) *Front Hubs:* The hubs on cars with disc brakes do not have a grease nipple. Thus, the front hubs of these cars should be repacked every 6,000 miles, rather than every 12,000 as stated in one part of the Owner's Manual. Cars with front drum brakes have the nipple and do not need repacking more than once in 12,000 miles.
 - (b) *Universal Joints:* There are two lubrication nipples on the front universal joint, one for the moving parts of the joint and one for the needle bearings. While the official lubrication chart indicates oil, rather than grease for the needle bearings, most service stations seem to use grease through both fittings. This does not appear to

do any damage, provided that a hand grease gun is used. High pressure grease equipment, which exerts something over two tons force, will blow out the grease seals on the bearings, causing them to lose grease quickly, run dry and wear out.

The above notes on high pressure equipment apply also to the rear hubs. Either a hand grease gun or a low-pressure adaptor on regular equipment must be used or the seals will be blown out with resulting damage to the bearings.

- (c) *Sticking Throttle*: Now and then, the throttle linkage on your TR-3 may show a tendency to stick. The remedy is very simple. Mix a small quantity of powdered graphite with some kerosene and fill an oil can with the mixture. Squirt a small amount of the mixture on all joints in the accelerator-carburetor linkage, paying special attention to the ball joint assembly located immediately in front of the front carburetor. This is usually the trouble spot. A few miles of driving will have the linkage back in shape again and periodic applications of lubricant will prevent reoccurrence of the problem.
5. **OIL LEAKAGE**: Some members who race their cars have reported oil leakage from the left side of the engine under racing conditions. This oil most likely is coming from the fuel pump and is the result of oil passing between the oil seal and pump body due to a loosely fitted oil seal retainer. On some pumps the seal is not being compressed on its seat in the pump body as a result of the retainer being loose in the bore, due to insufficient peening of the body. The leaking condition is quickly corrected by ensuring that the seal retainer is properly secured by peening or tapping the pump body. This has been corrected in production and owners of newer cars will have no trouble.
6. If you are uncertain of the rear end ratio of your car, "get out and get under" and take a look at the differential housing. On the cover plate there will be a splash of green paint if you have the 3.7 gears and splashes of green and white if you have the 4.1. If no marks, remove the rear cover plate and count the teeth on the ring gear. $37=3.7$ ratio, $41=4.1$ ratio.
7. **HARD TOPS**: If you have a soft top and are planning to install a hard top, the following information will be helpful. If the body number of your car is after EB5591, the normal hard top will fit and four out of five sets of TR-2 side curtains should fit. If the curtains do not fit, it may be necessary to reposition the curtain brackets on the doors. Prior to EB5591, specification changes were continually being made as the cars were improved to a final production standard. As a result, some older TR-2's have slight variations in body panels and the present

standard hard top may not fit. It would be advisable to check for fit before ordering a hard top.

8. **RUNNING ON:** "Running on" refers to the way in which an engine, when hot, will continue to fire unevenly after the ignition is shut off. It is caused by a build-up of carbon deposits in the combustion chambers and is usually most common in cars which are driven regularly in traffic at slow speed. Excessive use of the choke will also build up carbon. Bearing in mind that even a new car may fire once or twice after the ignition is off when the weather is very hot, try this cure:

Take the car out on the open road, get it thoroughly warm and then drive fast for a number of miles, making free use of the gears and keeping the RPM's high. Running the engine fast at full operating temperature tends to clean out the combustion chambers and blow the carbon out the exhaust. This procedure will benefit any car which is normally used for town driving and should be done every two or three thousand miles.

9. **CARBURETOR NEEDLES:** TR-2's should be fitted with GC needles for maximum performance. Normal is FV. TR-3's from Engine #TS8997E were fitted with TE needles in the SU H6 carbs and these were satisfactory through TS9349E. From TS9350E to TS10036E modified cylinder heads were fitted and the TE needles tended to give a weak mixture at lower engine speeds. Carburetors on engines from #TS10037E onwards are fitted with SM needles which give a richer mixture at low speeds and give optimum performance under all conditions. Owners of TR-3's with engines numbered between TS9359E and TS10036E might consider fitting the new needles, Part #504023. They will also give satisfactory performance with engines #TS8997E to 9350E and all carburetors supplied as spares are fitted with SM needles.

10. **CARBURETOR FLOAT CHAMBERS:** From Engine #TS9721E, the carburetors fitted to TR-3's have float chambers flexibly connected to the main body of the carburetor. There is a possibility on cars without the flexible mounting that under certain conditions vibration of the float chamber will cause bubbles in the gasoline, thus tending to restrict the fuel supply to the main jet. Conversion to flexible mounting may be made by the use of following parts:

2 securing bolts	Part #503811
4 rubber grommets	503813
2 washers	503812

11. **OVERDRIVE:** From experience, Standard-Triumph has found the two things that can seriously damage the Laycock de Normanville overdrive.

The first is an electrical fault, permitting overdrive to be engaged in reverse gear. If you have any doubts about the action of your overdrive, use this test to determine that the isolator switches on top of the gearbox extension are operating correctly.

The solenoid which actuates the overdrive can be heard to click in and out on selection of the three upper gears. Sitting in the car, with the ignition switch on and the gear lever in neutral, no click should be heard when the overdrive switch is flipped up to the "on" position until second, third or top gear is engaged. There should be no click when first or reverse is engaged. Make this test immediately if there is any doubt about the correct functioning of the overdrive electrical circuits and be sure that you cannot engage overdrive when in reverse. If there is any doubt in your mind about the action of your overdrive do not use it until your dealer has had a chance to look at it.

Cause number two is dirty oil in the gearbox. Constant shifting, especially hard or "speed" shifting under full acceleration, etc. and general rough use of the gearbox, can result in small metal particles moving around in the oil. These tiny particles can lodge in the seatings of the hydraulic valves in the overdrive unit and prevent its correct functioning. *Regular* transmission oil changes on overdrive-equipped cars are *essential* in order to assure correct functioning of the Laycock unit.

12. **RATTLES:** A number of common rattles can be cured quite easily as follows:
- (a) *Hood Hinge Pin Rattle:* A hard-to-find rattle in the area of the hood and scuttle is often caused by a worn hinge pin. Try driving over a rough road and reaching around to the hinge to feel if the pin is loose. If so, remove the hinge and center-punch the pin. If wear is not too excessive, this will swell the pin enough to stop the rattle. If there is considerable wear, replacement of the hinge is the only cure. Keep these hinges lubricated and there will be less chance of wear.
 - (b) *Hood Rattle:* This arises from the safety catch on the hood and is more of a bird-like squeak. To correct it, take a used brake cylinder cup or similar rubber fitting and insert it in the U-shaped bracket on the front center of the hood into which the striker pin engages. The washer should be such that it can just be pushed into the little space made by the U-shaped plate and will be tight enough to remain there. A temporary cure can be effected by sticking several thicknesses of friction tape under the plate.
 - (c) *Oil Dipstick Rattle:* If the oil dipstick is not a tight fit in the crankcase, it may swivel around and rest against the steering

column. This produces a rattle heard inside the car. Correction is accomplished by spreading the split end of the dipstick. Clamp the dipstick in a vise — not too tightly — and with the felt stop about $3\frac{1}{2}$ " from the vise. Insert a screwdriver between the two halves of the stick and turn it, spreading the split end. Try this until a tight fit in the crankcase is achieved.

- (d) *Battery*: Problems with the battery usually occur more in the form of slides and thumps. If you have the Lucas battery, tightening of the nuts on the tie-down rods will stop it from sliding back and forth. Do not over-tighten as it is possible to crack the battery case. Smaller replacements should be carefully wedged with wooden blocks.
- (e) *Exhaust System Rattle*: That thumping from beneath the car while the engine is idling is probably some part of the exhaust system hitting the frame. It does not take long to loosen the clamps, re-align the system and tighten it up again. Also, watch that seat-belt hold-down bolts are not hitting the muffler.
- (f) *Rear Shock Rattle*: A persistent clanking from the rear of the car may indicate loose rear shock absorber mounts. Tighten those and check the trunk and spare tire compartment for loose tools, etc.
- (g) *Fuel Tank Overflow Pipe*: This pipe is inclined to vibrate where it is clamped to the frame and produce a loud squeak. Tighten the clamp and apply a little grease between pipe and frame, or wrap a thickness of electrical tape around the pipe where it fits in the clamp.

“WINTERIZING” YOUR TRIUMPH

1. *Anti-Freeze*: Use a good grade of “permanent” anti-freeze. Alcohol-based compounds tend to evaporate and need periodic checking. Correct quantities can be figured from any service station chart, but *be sure!* Guessing could mean a cracked cylinder block. These quantities are correct:

1 quart — Protection down to 25 degrees F.

2 quarts — Protection down to 15 degrees F.

3 quarts — Protection down to 0 degrees F.

To be on the safe side, we suggest using three to four quarts. Do not use last year’s anti-freeze . . . the rust inhibitor may be completely worn out. New anti-freeze costs little and gives certain protection.

Before adding anti-freeze, drain and flush the cooling system. Check all hose connections for leaks and replace any cracked or rotten hoses. It is also a good idea to check the cylinder head bolts for tightness. *Do not* attempt to do this without a torque wrench. Correct torque is 95-100 ft./lbs. with the engine cold. This step is important, because any leakage of anti-freeze into the engine will cause serious damage to pistons, cylinders and bearing surfaces.

Always check your anti-freeze strength after adding water during the winter.

2. *Thermostat and Radiator Cap*: A special winter thermostat, Part #101956 is available for cars operated in very cold areas. This thermostat opens at 88 degrees C (186 F) and will keep engine temperature up in the coldest weather. If you have any doubt about your present thermostat, remove and test it. Place it in a pan of water and heat the water until a thermometer shows 160 degrees F. The thermostat should begin to open. If defective, *do not* replace with an American-made unit. Use Triumph Part #107590.

Note that American-made units, while they will work, do not close the bypass from block to radiator, thus preventing proper flow of the water. Due to this loss of cooling efficiency, only the factory thermostat is recommended.

Check your radiator pressure cap to see that the rubber seal is seating firmly against the flange inside the filler pipe. If the rubber is worn or deteriorated, or the spring not strong enough, replace the cap, Part #105035.

3. *Heater*: It’s surprising how many people are unacquainted with the heater valve which is located at the left rear of the cylinder head (as seen from the front). This regulates the flow of water to the heater and should be full on for the winter operation. Also, check heater hoses for leaks, etc.

4. *Lubrication*: Above all, follow the Owner's Manual. Factory specifications for certain areas were changed in 1958, however, and the correct engine and transmission lubricants are as follows:

<i>Engine Oil</i>		<i>Gearbox</i>	
Very Hot Climates and Racing		Above 30 F	Hypoid 90
Over 70 F	SAE 40	Below 30 F	Hypoid 80
Normal Summer Driving			
40—70 F	SAE 30		
Very Cold Weather			
0—10 F	SAE 10		

We are assured by the Laycock de Normanville engineers that the heavier lubricant will not affect the overdrive in any way.

5. *Carburetor and spark plugs*: No change is needed in spark plugs with the exception of a possible change to one range hotter plug in very cold climates.

The suction pistons in S.U. carburetors may act up in winter if they have not been carefully serviced. This usually takes the form of the pistons sticking, indicated by a tendency for the engine to stall when the car is brought to a halt and a definite hesitation in accelerating from very low RPM. Service procedure is as follows: Remove both dash pots and wash them carefully in gasoline. Remove and wash the suction pistons, being very careful not to bend the needles. Carefully wipe out the bores of the dash pots and, before reassembly, clean the shoulders on the carburetor bodies at the points where the dash pots bolt on. Reassemble, again taking care not to bend the needles, and remember that the suction piston will only go down in one position as it has a guide groove on one side, mating with a peg in the carburetor body. Also remember that the pistons should not be interchanged in the dash pots and that the pistons and dash pots, as units, must not be interchanged between the two carburetors. When assembly is completed, fill the top of the pistons with very light oil (5 wt.) or even machine oil such as 3-In-1 if sub-zero temperatures will be encountered. Normal weight oil is SAE 20.

6. *Battery*: Do not try to go through the winter with a worn-out battery. Always be sure it is at peak charge in cold weather. Don't overfill it . . . keep the water level barely over the top of the plates. To make sure, order a Battery Filler from Lucas Electrical Services, 505 W. 42nd St., New York City, and do the job properly.
7. *Tires*: Put your two best tires on the rear. Do not overinflate tires in winter . . . you will get better traction at minimum pressure. If you have been running at minimum all summer, check pressure. Cold air fills less space than warm!

As a general rule, snow tires and skid chains are not necessary. Triumph's superior weight distribution and traction are sufficient for all but the worst snow and ice conditions.

8. *Hints*: There are several spray or brush-on compounds available for chrome protection. Their use will help prevent possible damage to bright-work by salt and other compounds used on wintry roads.

Owners of TR-2's should be careful not to poke or jab their side screens or rear windows in very cold weather since the plastic becomes somewhat brittle and may crack or even shatter. TR-3's do not suffer from this.

A spray-on coating of anti-frost material on curtains and rear windows, inside and out, will make cold snaps far less dangerous. The defrosters will do an excellent job on the windscreen, but the curtains and rear window need extra help. See your dealer or auto parts store for the anti-frost material.

Pieces of old carpet can be used to supplement the under-felt backing the rubber floor mats and to increase the insulating effect on older cars with rugs.

9. *Dirt Shields*: Owners of early disc-brake models, particularly those with wire wheels, will save considerable expense on re-lining if they fit dirt shields to the front brake assemblies. These parts, #204378 for Right Hand and #204379 for Left Hand, protect the inner lining segments against sand and dirt thrown up from the road.

Installation is quite simple. The shields mount at three points, namely to the two bolts which attach the brake caliper housing to its mounting plates and to the bolt which attaches the forward lower mounting plate to the suspension vertical link. This last bolt mentioned must be replaced by a longer one, Part #118324, a Nyloc nut #YN2909 and a plain washer.

10. *Top and Side Screens*: Besides the method of erecting the top covered in Hints and Tips to New Owners, there are some details about these installations which will help keep the weather out, be it warm or cold. Side screens on early models without sliding windows are the most-mentioned offenders, but the later models can also stand some adjusting at times. Here are some ideas:

(a) On all sliding and non-sliding curtains up to mid-1958, there is a wedge-shaped sliding adjustment for height at the bottom of each curtain bracket. The lowest position of the slide will raise the curtain, making for a close fit at the top.

(b) Adjust the front and rear slides so that the front of the curtain meets the angle of the windscreen pillar properly. Before closing the

door, run your hand down the front of the curtain, curling the edge in so that it fits into the slot on the pillar when the door is closed.

- (c) After closing the door, run your fingers along the top of the curtain, tucking it inside the flap provided in the top. Do this when leaving the car as well, to prevent rain and snow from leaking in.
- (d) Don't forget to fasten the Tenax (TR-2) or Dot fasteners on the door.
- (e) Approximately $\frac{1}{4}$ " square weatherstrip may be used on the inside bottom edge of the side curtains where they contact the doors and body. This will eliminate drafts left after adjustments (a) through (d)
- (f) Owners of non-sliding curtains . . . don't forget to close the zipper once you're in!
- (g) The later-model sliding screens with heavy frames and the latest with Dzus fasteners need less adjustment for vertical height and will stay in place better at speed. However, some judicious bending of the frames will help the fit, and weather strip along the rear-most edge may help.
- (h) If you have trouble with the sealing roll which fits over the lip on the windshield frame to prevent air and water leaking under the edge of the soft top, try roughing the inner side of the rubber molding on the windshield frame with sandpaper. This will help the roll to stay in position.

GETTING SET FOR WARM WEATHER

When the first warm day comes along, it's a great temptation to put the top down and roar off down the road, BUT, there are a few items of spring cleaning which should be taken care of first.

1. *Engine Oil*: If you have been running with a light-weight oil during the winter, switch over to a heavier grade for the hot spell. Consult your Owner's Manual or see the table on page 25.
2. *Transmission and Rear End*: Latest factory specs indicate that 90 weight hypoid is advisable in both gearbox and rear end in the summer. This includes cars equipped with overdrive.
3. *General Lubrication*: While you're at it, better get a complete lubrication. Sloppy winter streets and spring rains combine to remove grease from vital spots. Have your dealer grease the car and check the wheel bearings if it has been more than 6,000 miles since they were packed.
4. *Front Wheel Bearings*: It must be remembered when re-fitting these bearings after packing that they must be adjusted properly so that there is neither preload or undue end float. Always adjust as follows:
 - (a) Ensure first that the Timken taper roller bearings are well packed with a long-fibre, high melting point grease.
 - (b) With the hub in position, tighten the castellated hub nut *with the fingers*, rotating the hub slowly at the same time to make sure that the bearings are properly bedded down.
 - (c) Tighten the nut *with the fingers* until all end float is eliminated in the bearing without creating any resistance to the free turning of the front hub.
 - (d) Turn the nut *back* until a slot in the nut lines up with one of the holes in the stub axle, insert the cotter pin and spread it.
 - (e) The recommended end float is from .003" to .005" but not less than .003" so that it may be necessary to turn the nut back two slots instead of one. .003" can just be felt as the smallest appreciable movement in bearing end float.
 - (f) **Under no circumstances should a wrench ever be used in tightening hub nuts.**

The only tool needed outside of your regular tool kit will be a suitable hub puller.

5. *Detail Work*: We suggest that you drain the anti-freeze and flush the cooling system with fresh water. It's time to change back to your summer thermostat. You'll notice some unwelcome heat in the cockpit unless

you remember to shut off the heater valve on the cylinder head. Clean the plugs and points . . . replace if indicated. Test compression and consider a valve grind if pressures vary more than a few pounds. Check your brake linings, particularly the inner pads on the front discs. Winter weather and the salt and cinders on the streets increase lining wear.

6. *Spring Cleaning:* Man the vacuum! Take up the floor mats and carpets and vacuum away the winter's accumulation of grit and gravel. Carpets need a good brushing or possibly dry cleaning. Always wax the car . . . it will pay dividends in preserving the finish and appearance from the hot sun. Use your tonneau cover to protect the seats and go over the leather with saddle soap.
7. **GUARD AGAINST POSSIBLE OVERHEATING:** On very hot days, if you are using your car in congested traffic areas, on mountainous roads, etc., the temperature gauge may climb into the red. Owners of 1958 and early 1959 TR-3's with the wide grill will benefit from the addition of air deflectors to fill the gap between the inner fender valance and the radiator. These deflectors prevent air from flowing past, rather than through, the radiator core and increase the cooling efficiency. The factory has made this addition easy by making available millboard deflectors painted to match your car. These are standard from TS 40104 and are available as spare parts. However, if you want to install your own deflectors, here is the method.

First, remove the front bumper guards, the grill and the bumper guard support tubes. Cut two pieces of light aluminum sheet to the height of the inner grill opening and wide enough to reach from just beyond the bumper support tubes to the sides of the radiator core. Allow an extra inch in height and bend a mounting flange at the bottom of each deflector. The flange should face forward and be provided with three holes. Use sheet metal screws through these holes to mount the deflectors directly to the floor of the grill opening. When re-installing the support tubes, secure the outer edge of the deflector to the mount; make sure that the inner edge of the deflector is flush with the side of the radiator and the job is complete.

Caution: Overheating may be caused by improper point adjustment, bad timing, loose head bolts, too lean a mixture, sludge in cooling system, loose fan belt, defective thermostat . . . or no water in the radiator! Check these things first if you have an overheating problem. However, the deflectors are definitely useful item on '58 and early '59 cars.

TRIUMPH TR-2 and 3 SPECIFICATION CHANGES

1. *Cylinder Head and Manifold* — TR-3: There has been some confusion in the past regarding the various combustion heads, manifolds and gaskets that have been fitted to the TR-3 since its inception. The following shows each change and the complete parts necessary. *These items are interchangeable only in sets!*

ORIGINAL TR-3

Combustion Head	Part #501209	} TS8471E through TS9349E
Inlet Manifold	302118	
Manifold Gasket	106937	

LE MANS TYPE HEAD

Combustion Head	Part #503662	} TS9350E to TS12605E, TS12607E to TS13023E; TS13029E, TS13032E to TS13036E, TS13044E to TS13051E only.
Inlet Manifold	302006	
Manifold Gasket	113168	

HIGH PORT HEAD

Combustion Head	Part #503663	} TS12606E, TS13024E to TS13028E, TS13030E to TS13031E, TS13037E to TS13043E and TS13052E to date.
Inlet Manifold	302119	
Manifold Gasket	113122	

All cars prior to TS9349E were TR-2's.

Following is a list of engine and commission (serial) numbers and modifications to the TR-2 and TR-3 over the years. Each modification was begun at a certain number, but, as the cylinder head-manifold listing above shows, a few later cars may have been built with the earlier equipment. Engine numbers are followed by E, serial numbers by L. *Commission Number*

MODIFICATION

TS 3500L (Approx.)	Change to present style of doors. Early TR-2's had doors which went the full depth of the body, making it difficult to exit when parked by curb.
TS 5469L	10" brake drums on the front. Previous cars had 9" all round.
TS 8971E	TR-3 Engine. (See above)
TS 9350E	Le Mans Head.

- TS 9721E Flexible float chamber mounting. On older cars, owners may benefit from changing to the flexible mounting, thus avoiding possible bubbles in the chamber cutting down the supply of fuel to the main jet. Order securing bolts, Part #503811, 4 grommets #503813 and 2 washers #503812.
- TS 11427E VP 3-layer connecting rod bearings.
- TS 12564E Aluminum rocker shaft pedestals.
- TS 12650E Full flow oil filter.
- TS 13046L Change of rear axle design giving taper roller bearings on rear hubs. Girling disc brakes.
- TS 13052E Final introduction of High Port Head. Note that some earlier cars had this head. See paragraph one, this section.
- TS 18478L Latest type clutch plates with racing type woven lining.
- TS 20780E Change to #117590 connecting rod bearings providing increased running clearance for greater oil film strength.
- TS 26656L Corrected speedometers fitted for use with Michelin X tires, 3.7 rear end. Unit is Smith's #SN6307-11, our #119047. Exchanges are available — see your dealer.
- TS 26704L As above for 4.1 rear end gearing. Smith's #SN6307 - 10, our #119046.
- TS 26698E Pistons with strengthened crowns introduced.
- TS 26825 Needle bearing now used at rear of constant pinion shaft. (*gearbox #*)
- TS 26851L Revised rear engine mount.
- TS 27689L Disc brake dirt shields installed as standard equipment on wire wheeled cars.
- TS 27858L As above for disc wheels.
- TS 28826L Side curtain fastening changed to Dzus fasteners.
- TS 29098L Speedometer and tachometer positions switched. Tachometer is now on left, speedometer on right. This helps the navigator during rallies.
- TS 38177L Line fuses installed in side, tail and number plate light circuits.

TS 40104L Air deflectors installed behind grill.

TS 50001L Quiet starter motor, new ring gear, gearbox housing with side filler plug, eliminating dipstick in gearbox.

As this Handbook is being printed, more changes are being incorporated in the TR-3 in line with the policy of the Standard-Triumph Motor Company; to at all times improve the car for greater dependability, comfort and driving enjoyment. As these improvements are made, TSOA members will be notified via new pages for this book.

BASIC COMPETITION PREPARATION — TRIUMPH TR-2 and TR-3

Owners who want to run their cars in competition must plan to spend care in preparing them if they intend to finish in front. The following is a list of the necessities for proper preparation of a TR-2 or TR-3 for racing. It is possible, when time and cost are important, to perform only selected operations from the list, but, in the end, a winning car will be prepared completely.

Factory Competition Equipment

<i>Part Number</i>	<i>Item</i>
700896	Racing Windshield
202390-91	Rear Competition Shocks
201899	Front Competition Springs
508397	Anti-Sway Bar Kit
502126	Aluminum Sump Kit
301644	Skid Plate
301590	Alfin Rear Brake Drums
505014	4.1 Ring Gear and Pinion (For faster acceleration in non-overdrive cars—good for short track racing).
504028	SM Carburetor Needle Dunlop High Speed Tires Michelin X Tires

In addition to the above, an over-bore kit is available which raises the displacement from 1991 cc to 2200. This kit is more useful for those wanting maximum acceleration and torque than for those who race, since it puts the car a class higher, into D rather than E Production under SCCA rules. Cars with this engine have won several European rallies, the extra power being very handy for mountain climbing, etc. Parts required are:

122208	Piston Assembly (4 needed)
122166	Cylinder Liner (4 needed)
205481	Head Gasket (1 needed)

The head gasket number mentioned is for the later TR-3. Please check the listing of various heads and gaskets on page 30 before ordering the gasket if yours is an older TR-3.

Factory competition equipment, with the exception of the big bore kit, which is available separately only, and the SM needles which have been standard equipment since TS10037E, is available installed as original equip-

ment. There is a considerable saving if you order this equipment installed at the factory rather than buying it separately later. Of course, the items are stocked for those who already have the car they intend to race.

Competition shocks and springs are best ordered as original, since later installation is more expensive and a long job. The aluminum sump is considerably larger than the standard one and reduces ground clearance to about four inches. It is cast aluminum and the skid plate should be installed to protect it. Wire or disc wheels can be used. The main advantage of wire wheels is the ease and speed of changing.

If you order a new TR-3 with competition equipment, please remember that this is a special order and production will take longer. A wait of two or three months can be anticipated.

GENERAL

You should be thoroughly familiar with the mechanical ins and outs of your car. The first recommended purchase is a Factory Service Manual, priced at \$9.00 to TSOA members. A complete set of all types of wrenches, feeler gauges, torque wrench, etc., is necessary if you are to do your own work. Remember, Triumphs use SAE standard size nuts and bolts on almost all parts except carburetors.

The car should be carefully broken in before any racing preparation is begun. Follow the directions in your Owner's Manual. Do not exceed 3500 RPM for the first 500 miles and drive at moderate speeds, avoiding lugging the engine in higher gears. A good 100 miles driving is recommended before any sustained high-speed driving is attempted. Racing preparation should not begin, nor should any attempt at racing be made until the car is thoroughly loosened up — about 5000 miles, minimum.

Engine Balance

An excellent, but expensive way to insure top performance is to balance the moving parts of the engine, clutch unit and drive shaft. Unless you are qualified to strip and re-assemble your engine, the job may cost as much as \$400—\$500, but it can pay dividends in increased acceleration and less risk of damage if 5000 RPM is accidentally exceeded. The major cost is in disassembling and re-assembling, so if you can do the work, you will be ahead.

When balancing, the parts involved are the piston, wrist pins, connecting rods, crankshaft, flywheel and clutch. Static and dynamic balancing must be correct in order to have the job done right. Make sure that the work is done carefully by a reputable shop. If the engine is disassembled, inspect pistons and sleeves for wear; check the bearings; make sure the crankshaft is un-scored and not out of round, and replace any part worn or imperfect. Re-

assembly should be done with great care, following all factory instructions, with particular attention to correct installation of the sleeves. Always use new gaskets, of course. New lock washers on the connecting rod caps are a must.

If the engine is disassembled, examine all parts for possible flaws, especially if it is an older car. The "Magnaflux" or a similar system will show up the smallest crack or flaw. In addition, Magnaflux the front hub spindles, rear hubs, steering mechanism and brake components. Any part which will come under extra strain while racing must be checked. Your safety depends on the top condition of these essential components and absolutely no flaws in their operation can be tolerated.

Don't skimp on seat belts. Surplus Air Force type or others with metal-to-metal clasps and nylon webbing should be used. Anchor securely to the frame, spacing anchorage points the full width of the seat or more.

Follow SCCA or other sponsoring group's regulations concerning roll bars, remembering that a bar braced from the rear is much sturdier.

ENGINE

Cylinder Head

Remove all carbon deposits from combustion chambers. Replace head after valves are ground and any other service performed, using a new gasket coated with non-hardening sealing compound. Torque cylinder head nuts to 100 lbs./ft. with the engine cold and *recheck after 500 miles*.

Caution: Do not move pistons when head is removed without observing precautions listed in the Service Manual, or the cylinder liners will be disturbed and the seals broken, allowing a leakage of coolant into the crankcase which could be disastrous.

Valves

Valves should be ground at the time of race preparation whether the car is new or not. It is assumed that the car will not be raced until after 5000 miles of running and the factory recommends a valve grind at that mileage. Even if the car is raced before that time, valves should be lapped-in carefully. At the same time, the valve springs should be checked for strength and replaced if weak. Pushrods should be looked at in case accidental over-revving has bent one. Please note that the complete procedure for checking the springs is outlined in the Service Manual.

Cars from Engine #TS12564E on are equipped with aluminum rocker shaft pedestals. Valve clearances on these models should be set at .010" for both intake and exhaust. Earlier models have cast iron pedestals and racing clearances should be .013" or .014" for both intake and exhaust.

Timing

4 or 5 degrees static advance is the factory-recommended timing setting.

No appreciable gain in performance will be found by advancing the timing much beyond the recommended factory setting although this can vary with gasoline between the East and West coast. With West Coast gas, the setting may be as high as 10 degrees static advance. You will have to experiment a bit to find the correct setting for your TR.

Important: First, always be sure to use the correct factory method of timing as outlined in the Service Manual and on page . Second, remember that on very high-test gasoline, an engine will not ping and it is possible to have the timing too far advanced. This can result in broken pistons and possibly a smashed engine. Be careful!

Spark Plugs

Lodge CNY plugs are now being fitted as original equipment and are satisfactory for all normal use. For high-speed work, Lodge 2HN are recommended. Gap at .025" as with earlier makes of plugs.

Carburetors

On all TR-3's from Engine #TS10037E to date, SM needles are fitted. These give optimum performance under all conditions. Engines from TS8997E to 10037E may be fitted with these needles for better mixture at low speeds. Top performance will be gained from TR-2-s by fitting GC needles.

The following is a brief list of 16 steps in carburetor tuning. It is for reminder of correct sequence only, and you will certainly need the Service Manual to supplement it. Remember, there are no short cuts to good tuning.

1. Remove valve cover and spark plugs, slacken off both bolts of rear throttle spindle coupling. Remove air cleaners and wash filter element. Undo clip for outer choke cable on front carb linkage and remove clevis pin from rear carb choke connecting rod.

2. Test compression — all cylinders should be approximately equal for good tuning.

3. If a "C" type wrench adaptor is not available, remove rocker shaft assembly and torque all head bolts to 100 ft./lbs. The "C" wrench enables you to torque the bolts without removing the rocker assembly.

4. Adjust rocker clearance. .010 *cold* is the correct setting. All adjustments must be made on the heel of the cam.

5. Clean and adjust distributor points. .015 is the correct gap. Put a very light smear of grease on the cam and check operation of the automatic advance.

6. Check static ignition timing according to factory approved method. (4 degrees before TDC, subject to local fuel octane rating). Use a 12V test lamp.

7. Clean and adjust spark plugs to .025" gap. Correct type is Lodge CNY for regular use, 2HN for high speed work.

8. Check fuel level in carbs. A quick check with dash pots off — hold jets in rich position — fuel should not flood over top of jets. If it does, adjust float levels to $\frac{1}{2}$ ". Check that needles are free. If there is binding in the jets, either the needles are bent or the jets are off center. Adjust according to service manual.

9. Replace dash pots and top up dampers with oil. SAE 20 for summer use, SAE 5 for winter.

10. Run engine to warm up to normal temperature (185°F.)

11. Screw up jet adjusting nuts (turn clockwise) to full weak position and turn back 5 flats on each nut.

12. As the carb throttle spindles are disconnected (step 1), turn each throttle adjusting screw to produce the same hissing sound at 800 RPM (or the same vacuum reading on Uni-Syn gauge).

13. Check that the fast idling screw is not interfering with this adjustment on the front carb.

14. Now check each carb individually for correct mixture. To check front carb, cut out rear carb by lifting rear piston all the way up; the engine will then run on the front carb. The revs should rise slightly and fall immediately to about 400 RPM with a rhythmic beat from the two cylinders firing correctly.

If the revs do not drop, the front carburetor is running too rich and the jet adjusting nut must be turned up one flat at a time to weaken it. If, when lifting the piston on the rear carburetor the engine cuts out completely, the front carburetor is running too lean and the jet adjusting nut must be turned down one flat at a time until the desired result is achieved. Check the rear carburetor by reversing this process.

15. Recheck the "hiss" on each carb at 800 RPM — this may have risen on one or the other due to improving the mixture. Adjust on throttle screws as necessary.

16. Tighten throttle spindle coupling, while ensuring that the throttle screws are held on their stops. Lubricate throttle linkage. Replace choke linkage, making sure that there is a little slack in the cable so as not to pull the jets down. Replace air cleaners and adjust fast idling screw.

Steering

Adjust steering box for minimum free play and check condition of the ball joints in the track rods (tie rods). Allow no looseness at any steering joint, but make sure all parts move freely without binding. Toe-in of the front road wheels must be adjusted on BOTH outer tie rods which must always remain exactly equal in length.

General Lubrication

Use 90 weight hypoid oil in gearbox, rear end and steering box. Lubricate all moving parts according to instructions in Owner's Manual. Be extremely careful when re-packing and replacing front wheel bearings and repack only with a long fibre, high melting point grease. *Follow Procedure below:*

Any adjustment should be made with the wheel off the ground. After removing and checking the bearing, repack with grease and re-install. Rotate the hub to make sure that the bearing is properly seated. Continue rotating while tightening the hub nut with the fingers. When the bearing is properly bedded down, resistance will be felt against turning of the nut. At this point, back off the nut one flat or the requisite amount to give .003" to .005" end play, no more, no less.

Road Wheel Balance

The factory balances all wheels statically to fairly fine limits, but for racing use, a re-check should be made. All wheels should be inspected for any eccentricity or wobble. Factory tolerance on "lift and fall" and "wobble" is 1/16" maximum which is fine for racing use. Wheels must be true, and wire wheels must be checked more thoroughly than discs. Always have this work done by a reputable wheel shop and make sure factory tolerance is not exceeded. Static *and* dynamic balancing must be done.

Tires

Michelin X, Dunlop Road Speed or other top-quality brand of tires suitable for competition are suggested. If the car is fitted with the Michelin X tires, a differential of about five pounds pressure between front and rear is advisable. Use 28 lbs. or higher front and 33 lbs. or higher rear for racing, depending on temperature.

Correct toe-in for Dunlops is 1/8", for Michelin neutral to 1/16".

Brakes and Clutch

Fit new pads to disc brakes and linings to drum brakes if worn and examine as frequently as you would for tires. On drum brakes if you wish, you may fit competition (hard) linings, although the factory linings are quite adequate. If also used on the street, these linings are apt to grab and should be used with caution. The TSOA has a special Girling Brochure available which describes detailed service of the hydraulic system and brakes.

From Engine #TS18478E on, TR-3's have been fitted with a wound woven yarn type of clutch facing, Part #116638. This is a full competition type lining and owners of older cars will do well to install it for best performance. Extra heavy duty clutch springs are not normally necessary.

Chassis

Go over the entire car and tighten loose bolts, check strain points and attachments of accessories. Run a general inspection on hydraulic system, electrical system, shock absorbers, drive train, etc. Check *everything*.

Allowable Modifications

If you are planning to remain in Class E Production under SCCA rules, there are no allowable modifications to the engine and running gear. It is permissible to match the carburetor ports with the manifold ports and the manifold ports to the head ports, but enlarging the ports is not permitted. Racing camshafts, pistons, higher compression, etc., are not allowed. The muffler may be removed which will decrease weight but won't improve power. Additional gauges may be fitted such as oil temperature, vacuum, etc., and may be very helpful.

For further details, consult the competition regulations of the club issuing your competition license.

A SHORT COURSE IN THE USE OF A TACHOMETER

The most important function of a tachometer is as a guide for shifting during competition driving when high speeds and peak RPM's are constantly used. In this type of driving, the tachometer warns the driver when he is getting near or exceeding the safety limit of 5000 RPM. For example, if a driver in a race approaches a corner at 80 miles per hour (4000 RPM with 3.7 rear axle ratio), he would have to brake first before shifting down to third gear, since a down-shift to third at 80 MPH would bring the engine RPM's to 5280, which is over the red line and could cause engine damage. See RPM table below.

In normal driving, the tachometer can be very useful, especially in highway situations. The Triumph engine develops peak pulling power and best acceleration at just over 3000 RPM. So, if you are cruising at 50 MPH in top gear, (2500 RPM), and wish to pass someone quickly, a downshift to third gear (3300 RPM at 50 MPH) will give maximum acceleration and enable you to pass safely and quickly, shifting up to top gear again after you are well past the other car.

Although the TR engine will pull well in top gear at 1500 RPM, it is advisable to keep the RPM's between 2000 and 3500 since the engine is smoothest and most economical in that range. The engine does not develop much power at 1500 and down-shifting will give you more flexibility in getting out of tight traffic situations.

Most owners find the TR's smooth-shifting gearbox and willing engine a constant temptation to use peak RPM's on all occasions. It should be re-

membered that constant use of maximum RPM's will increase the normal rate of wear and have a noticeable effect on your gas mileage. If you like to see the tach needle at 5000, reserve your enthusiasm for the open road where your car is at its very best.

ROAD SPEED DATA

	O.D. Top	Top	O.D. 3rd	3rd	O.D. 2nd	2nd	1st	Re- verse
Gearbox Ratios	0.82	1.00	1.09	1.325	1.64	2.00	3.38	4.35
Overall Ratios:								
3.7 Axle	3.03	3.7	4.02	4.9	6.07	7.4	12.5	16.1
4.1 Axle	3.28	4.1	4.35	5.3	6.57	8.0	13.5	17.8
Engine Speeds (3.7 axle)								
Using Dunlop Tires:								
at 10 m.p.m	410	500	540	660	820	1000	1630	2180
at 10 km./hr.	250	310	340	410	510	620	1050	1350
Using Michelin X Tires:								
at 10 m.p.h.	420	515	560	680	850	1020	1720	2240
at 10 km./hr.	250	320	350	420	530	630	1070	1390
Engine Speeds (4.1 axle)								
Using Dunlop Tires:								
at 10 m.p.h.	440	550	580	710	890	1080	1830	2400
at 10 km./hr.	270	340	360	440	550	670	1140	1480
Using Michelin X Tires:								
at 10 m.p.h.	450	565	600	730	910	1100	1860	2460
at 10 km./hr.	290	360	380	460	510	690	1160	1570



There's no end to glorious scenery on the Triumph Rallies of Europe. Here, two rallyists pause to view the magnificent Austrian alps on the 1959 Rally.

THE TRIUMPH RALLIES OF EUROPE

Since 1957, the TSOA has organized rallies through Europe that represent for the sports car enthusiast the ultimate in fun and participation. It all begins when the rallyists, leaving from New York, climb aboard a special plane bound for England, and after an "extra-service" flight, step off to find their new TR's waiting on the field. Then, using the tremendous saving they made on the European delivery of their cars, the group leaves for a month's drive through Europe's vacation spas and "off-the-tourist-path" countryside. All arrangements are made by the TSOA, hotels, breakfast and supper, receptions, parties, guides—in fact everything is planned to keep business out of your pleasure.

The tour is offered by the Association each spring, a maximum passenger list set at eighty. It seems all of Europe has smiled and waved at the long line of Triumphs whizzing by . . . or at least they have in England, France, Monaco, Italy, San Marino, Austria, Germany, Liechtenstein, Switzerland, Scotland, Denmark, Sweden, Holland, and Belgium. At a cost that means savings, you can have the prideful glow a rallyist gets when stepping behind the wheel of his shiny new TR and the exciting adventure of scooting around the Continent. So if you're thinking of a new TR and your wildest dreams are European, write the TSOA for details about the next rally leaving.

SUGGESTED COMPETITION RESULTS FORM

When you have placed in a competitive race, rally, etc., please let the TSOA know by using a form similar to the one below. Keeping Triumph in the news is important . . . we want to know, Standard-Triumph wants to know and your fellow members are certainly interested as well. Send your successes to the TSOA, Box 170, Radio City Station, New York 19, New York. We can use photos too!

NAME _____

ADDRESS _____

CAR: Year and Number _____

EVENT: _____

PLACE: _____

DETAILS:

ADDRESS CHANGES

It is very important for the TSOA to know your new address immediately when you move. A large volume of mail and an ever-increasing number of members makes it impossible for us to check on individual addresses when mail is returned as undeliverable. All we can do is remove the person's name from our files. Please avoid needless complications by sending your new address *and* your old one as soon as you move.

MY OLD ADDRESS WAS: _____

MY NEW ADDRESS IS: _____

CORRECTIONS TO SPELLING, ETC.: _____

CHANGE EFFECTIVE (DATE): _____

TSOA MEMBER'S HANDBOOK — Revisions and Additions #2

Standard-Triumph Automobile Association



The STAA, set up in the fall of 1960, is an international club with headquarters in London offering membership to owners of all Standard-Triumph vehicles. In the United States, the TSOA continues to be the chief body acting as a clearing house for technical and other problems and keeping members up-to-date via the NEWSLETTER. The TSOA is, of course, primarily an organization for owners of Triumph "Sports" models (TR-2, TR-3), Herald Coupe and Convertible) but STAA membership for owners of other Standard-Triumph products will be processed through the TSOA offices.

The formation of the STAA extended the scope of TSOA membership to a considerable extent, making it possible for U.S. members to get in touch with STAA groups in other countries and obtain travel information from the London office when vacationing overseas. Communication between clubs around the world makes international events possible and all members can profit from the exchange of ideas on service and maintenance, driving techniques in various climates, etc.

STAA Membership cards are sent along with the TSOA card. The badge, shown at the top of the page, can be purchased separately for \$1.50. Note that all STAA correspondence should be sent to the TSOA in New York.

Herald Lubrication Fittings:

Herald-owning members who do their own servicing will need two Alemite grease fittings. They are #1637-B (small) and #1688-B (large). The larger fitting goes in the steering box and the other one in the front suspension pivots, water pump and rear hubs. Check your car before purchasing both fittings since later model steering boxes also use the smaller fitting. Follow lubricating instructions in the Owner's Manual with great care.

TR-3 Generator and Regulator Change:

At engine number TS59289, the generator, Part #205939 (Type C39, 19 Amp.) and matching regulator, Part #102766, were replaced by a generator of increased capacity, Part #203252 (Type C40, 23 Amp.) and matching regulator, Part #122089.

The generators and regulators are interchangeable *in pairs only*. The new type generator *must not* be used with the old type regulator, or vice versa.

Gear Lever Rattle:

Although the TR-3 has an anti-rattle device incorporated in the lower end of the gear lever, a rattle sometimes develops which can be cured in the following manner:

1. Undo the lock nut and remove nut and gear lever knob.

2. Remove gear lever boot.
3. Remove the screw and bolt from the domed gear lever cap, being careful not to let the gear lever rise up and disturb the anti-rattle spring and plunger at the lower end of the lever.
4. Observing the precautions in Step 3, withdraw the domed cap and domed washer leaving the coil spring still in position.
5. Examine the irregularly-shaped hole in the domed cap and if the edges show that the gear lever has been rubbing against them, obtain more clearance at these points by filing the edges.
6. Obtain a piece of plastic hose $\frac{7}{8}$ " long and $\frac{5}{8}$ " inside diameter and insert the hose over the gear lever and inside the coil spring.
7. Smear some grease on the top of the domed washer. Reassemble.

Correct Speedometers:

Each Triumph is equipped with matching tires, rear end ratio and speedometer to ensure correct miles per hour readings. When tires or gear ratio are changed, it is necessary to exchange speedometers as well. A guide to the correct instrument for each combination of tires and axle ratio is given below. Members who are in doubt should write to the TSOA to verify the correct instrument for their cars since some early models had different units.

Early Series:

<i>3.7 Axle — Dunlop Tires</i>	
Part #108192 — Mfr's #SN 6307/04	1180 rpm
<i>4.1 Axle — Dunlop Tires</i>	
Part #113631 — Mfr's #SN 6307/08	1300 rpm
<i>3.7 Axle — Michelin Tires</i>	
Part #119046 — Mfr's #SN 6307/10	1325 rpm
<i>4.1 Axle — Michelin Tires</i>	
Part #119047 — Mfr's #SN 6307/11	1200 rpm

Present Series:

<i>3.7 Axle — Dunlop Tires</i>	
Part #108192 — Mfr's #SN 6319/00	1184 rpm
<i>4.1 Axle — Dunlop Tires</i>	
Part #113631 — Mfr's #6319/02	1312 rpm
<i>3.7 Axle — Michelin Tires</i>	
Part #119047 — Mfr's #SN 6319/06	1216 rpm
<i>4.1 Axle — Michelin Tires</i>	
Part #119046 — Mfr's #SN 6319/04	1344 rpm

Both the manufacturer's number and the rpm figure appear centrally on the instrument dial.